

Table 1
Operational Summary for the On-Site Portion of the OU2 Groundwater Remedy, Second Quarter 2018⁽¹⁾ Reporting Period
Operable Unit 2, Northrop Grumman Systems Corporation,
Bethpage, New York

	Quarterly Flow Rates (gpm)		Quarterly Flow Volumes (MG)			Quarterly VOC Concentrations (µg/L)		VOC Mass Removed (lbs) ⁽⁷⁾		
	Design ⁽²⁾	Average ^(3,4)	Design ⁽²⁾	Actual ^(3,4)	% of Design	TCE ⁽⁵⁾	TVOC ^(5,6)	Quarterly	Annual	Cumulative
Influent Groundwater										
Well 1 ⁽¹¹⁾	800	791	104.8	103.0	98%	631	660	568	1,072	47,051
Well 3R ⁽¹¹⁾	700	706	91.7	92.0	100%	332	370	284	552	91,141
Well 17 ^(11,12)	1,000	1,003	131.0	129.0	98%	111	140	151	293	53,320
Well 18 ^(11,12)	600	809	78.6	104.0	132%	46	70	61	120	6,489
Well 19 ^(11,12)	700	506	91.7	65.0	71%	125	150	81	150	8,530
Total⁽¹³⁾	3,800	3,815	498	493	99%	--	--	1,145	2,187	206,531
Effluent Groundwater⁽⁴⁾										
Calpine	100 - 400	113	--	14.8	--	--	--	--	--	--
OXY Biosparge ⁽¹⁰⁾	2 - 42	0	--	0	--	--	--	--	--	--
West Recharge Basins	1,112 - 1,455	2,526	--	331.0	--	--	0.8	--	--	--
South Recharge Basins ⁽¹²⁾	2,231	1,122	292.4	147.0	50%	--	1.4	--	--	--
Total⁽¹⁴⁾	--	3,761	--	493	--	--	--	--	--	--
Additional Flow to South Recharge Basins										
Storm Water Runoff Contributing to South Recharge Basins Flow Volume ⁽¹⁴⁾	--	--	--	21.7	--	--	--	--	--	--
Total Flow Volume to South Recharge Basins^(12,14,15)	--	--	292	169	58%	--	--	--	--	--
Treatment Efficiencies⁽⁹⁾										
Tower 96 System:	99.9%									
Tower 102 System:	>99.9%									

Notes and abbreviations on last page.

Notes and Abbreviations:

- (1) Quarterly reporting period: April 03, 2018 through July 03, 2018
 - (2) "Design" flow rates were determined for the five remedial wells and for the South Recharge Basins based on computer modeling (ARCADIS G&M, Inc. 2003c, modified in April 2005). Flow rates for Calpine, OXY Biosparge and West Recharge Basins are typical flow rates and are provided for reader information. "Design" flow volumes represent the volume of water that should be pumped/discharged during the reporting period and is calculated by multiplying the design rate by the reporting period duration.
 - (3) "Average" flow rates for the remedial wells represent the average actual pumping rates when the pumps are operational and do not take into account the time that a well is not operational. During this quarterly reporting period, the remedial wells operated for the following percentage of the time: Well 1 (99.4%), Well 3R (99.4%), Well 17 (98.1%), Well 18 (98.1%), and Well 19 (98.1%). "Actual" volumes are determined via totaled values computed by SCADA using the instantaneous flow rates transmitted from local flow meters.
 - (4) "Average" flow rates for the system discharges represent the average flow rate during the entire reporting period and are determined by dividing the total flow during the reporting period by the reporting period duration. The Calpine and South Recharge Basins flow volumes are determined via totaled values computed by SCADA using the instantaneous flow rates transmitted from local flow meters. The West Recharge Basin flow is calculated by subtracting the cumulative flow to the other discharges from the total influent flow. Actual flow to the recharge basins is greater, as shown, because storm water combines with the plant effluent prior to discharge to the recharge basins.
 - (5) The TCE and TVOC concentrations for the remedial wells are from the quarterly sampling event performed during this reporting period on May 10, 2018.
 - (6) The TVOC concentration for the two sets of recharge basins are their respective average monthly SPDES concentration for the current quarter.
 - (7) TVOC mass removed for the reporting period is calculated by multiplying the TVOC concentration from the quarterly sampling event and the quantity of water pumped during the reporting period.
 - (8) There are four discharges for the effluent groundwater: South Recharge Basins, West Recharge Basins, Calpine and OXY Biosparge system. Treated water is continuously discharged to the south and west recharge basins, and is available "on-demand" to both the Calpine Power Plant (Calpine) for use as make-up water, and the biosparge remediation system operated by Occidental Chemical (OXY Biosparge).
 - (9) Treatment System Efficiencies are calculated by dividing the difference between the remedial well flow weighted influent and effluent TVOC concentrations by the remedial well flow weighted influent concentration.
 - (10) Occidental Chemical has not reported any water usage for the OXY Biosparge system since May 2016.
 - (11) The downtime during Second Quarter 2018 was minor and due to typical operation and maintenance. See Note 12 for detail on reduced percent design flow values.
 - (12) During the second quarter the pumping rates continued to be adjusted at Wells 17 through 19 to accommodate a basin rehabilitation work at the western most of the South Basins. Rainfall events would dictate the increase or decreases in pumping needed to maintain draining of the western most of the South Basins. Average pumping rates and modified South basin recharge rates are shown above.
 - (13) Total pumpage/recharge rates are accurate to ±15% due to limitations in metering.
 - (14) Storm Water Runoff Volume is calculated by multiplying the adjusted tributary area and NOAA precipitation data for the reporting periods. The adjusted tributary area is tributary area that is adjusted by the runoff coefficient to exclude the infiltration volume from the total rainfall volume. The tributary area, runoff coefficient, and adjusted tributary area are from Dvirka and Bartilucci Consulting Engineers' Storm Water Permit Evaluation Report (January, 28, 2010). The NOAA precipitation data are calculated as a sum of NOAA daily precipitation data for the reporting period. NOAA precipitation data are retrieved from Station GHCND:USW00054787 - FARMINGDALE REPUBLIC AIRPORT, NY US.
 - (15) Total Flow Volume to South Recharge Basins is estimated as a sum of flow volumes contributed from the Effluent Groundwater to South Recharge Basins and from Storm Water Runoff to South Recharge Basins.
- | | | | |
|------|----------------------|-------|---|
| -- | Not Applicable | NOAA | National Oceanic and Atmospheric Administration |
| µg/L | micrograms per liter | SCADA | Supervisory Controls and Data Acquisition |
| gpm | gallons per minute | SPDES | State Pollution Discharge Elimination System |
| lbs | pounds | TCE | trichloroethene |
| MG | million gallons | TVOC | total volatile organic compounds |
| | | VOC | volatile organic compounds |

Table 2
 Concentrations of Constituents in Remedial Wells and
 Treatment System Effluents, Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituents ⁽¹⁾ (units in µg/L)	Location ID: Sample ID: Sample Date:	WELL 1 WELL 1 5/10/2018	WELL 3R WELL 3R 5/10/2018	96 EFFLUENT 96 EFFLUENT 5/10/2018	WELL 17 WELL 17 5/10/2018
Volatile Organic Compounds (VOCs)⁽²⁾					
1,1,1-Trichloroethane		< 2.5	0.66	< 0.50	0.28 J
1,1,2,2-Tetrachloroethane		< 5.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane		< 5.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 5.0	1.4	< 1.0	0.83 J
1,1-Dichloroethene		2.7	3.9	< 0.50	1.8
1,2-Dichloroethane		< 5.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		4.2 J	< 1.0	< 1.0	0.36 J
2-Butanone (MEK)		< 50	< 10	< 10	< 10
2-Hexanone (MBK)		< 25	< 5.0	< 5.0	< 5.0
4-methyl-2-pentanone (MIK)		< 25	< 5.0	< 5.0	< 5.0
Acetone		< 50	< 10	< 10	< 10
Benzene		< 2.5	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 5.0	< 1.0	< 1.0	< 1.0
Bromoform		< 5.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 10	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 10	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 5.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 5.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 5.0	< 1.0	< 1.0	< 1.0
Chloroform		< 2.5	< 0.50	< 0.50	< 0.50
Chloromethane		< 5.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		5.9	4.2	< 0.50	2.9
cis-1,3-Dichloropropene		< 5.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane		< 5.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		< 5.0	< 1.0	< 1.0	< 1.0
Methylene Chloride		< 2.5	< 0.50	< 0.50	< 0.50
Styrene		< 5.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		20.1	27.8	< 0.50	21.3
Toluene		< 5.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 2.5	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 5.0	< 1.0	< 1.0	< 1.0
Trichloroethylene		631	332	0.43 J	111
Trichlorotrifluoroethane (Freon 113)		< 2.5	2.1	< 0.50	3.7
Vinyl Chloride		< 2.5	2.0	< 0.50	< 0.50
Xylene-o		< 5.0	< 1.0	< 1.0	< 1.0
Xylene-m,p		< 5.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽²⁾		660	370	0.43	140
1,4-Dioxane⁽²⁾		10.4	15.0	11.9	9.48

Notes and abbreviations on last page.

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Constituents ⁽¹⁾ (units in µg/L)	Location ID: Sample ID: Sample Date:	WELL 18 WELL 18 5/10/2018	WELL 19 WELL 19 5/10/2018	WELL 19 REP-051013-SC-1 5/10/2018	102 EFFLUENT 102 EFFLUENT 5/10/2018
Volatile Organic Compounds (VOCs)⁽²⁾					
1,1,1-Trichloroethane		0.49 J	0.33 J	0.35 J	< 0.50
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		1.3	0.68 J	0.72 J	< 1.0
1,1-Dichloroethene		3.6	1.6	1.7	< 0.50
1,2-Dichloroethane		< 1.0	0.43 J	0.38 J	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
2-Hexanone (MBK)		< 5.0	< 5.0	< 5.0	< 5.0
4-methyl-2-pentanone (MIBK)		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 0.50	0.40 J	0.46 J	< 0.50
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		2.9	16.6	17.1	< 0.50
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride		< 0.50	< 0.50	< 0.50	< 0.50
Styrene		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		14.3	6.6	6.9	< 0.50
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene		45.7	125	126	< 0.50
Trichlorotrifluoroethane (Freon 113)		1.7	1.3	1.4	< 0.50
Vinyl Chloride		< 0.50	< 0.50	< 0.50	< 0.50
Xylene-o		< 1.0	< 1.0	< 1.0	< 1.0
Xylene-m,p		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽²⁾		70	150	160	0
1,4-Dioxane⁽²⁾		7.73	7.08	5.60	8.75 J

Notes and abbreviations on last page.

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Notes and Abbreviations:

- (1) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016c).
 - (2) VOC samples analyzed using USEPA Method 8260C. 1,4-dioxane samples analyzed using USEPA Method 8270D-SIM.
 - (3) Total VOC results rounded to two significant figures.
- 2.7 Bold value indicates a detection.
< 5.0 Compound is not detected above its laboratory quantification limit.
J Constituent value is estimated.
µg/L micrograms per liter
OU2 Operable Unit 2
REP blind replicate sample
USEPA United States Environmental Protection Agency
VOC volatile organic compound

Table 3
Vapor Sample Analytical Results for Treatment Systems,
Second Quarter 2018,
Northrop Grumman Systems Corporation,
Operable Unit 2, Bethpage, New York

Constituents (Units in $\mu\text{g}/\text{m}^3$)	Location ID:	96 MID-EFFLUENT	96 SUP MIDTRAIN	96 EFFLUENT
	Sample ID:	T96 MIDTRAIN (AA)	T96 SUP MIDTRAIN (AA)	T96 EFFLUENT (AA)
		5/15/2018	5/15/2018	4/13/2018
Volatile Organic Compounds (VOCs)⁽¹⁾				
1,1,1-Trichloroethane		10	<0.54	4.2
1,1,2,2-Tetrachloroethane		<0.69	<0.68	<0.55
1,1,2-Trichloroethane		0.54 J	<0.54	<0.44
1,1-Dichloroethane		40.9	5.3	28
1,1-Dichloroethene		132	78.9	49.2
1,2-Dichloroethane		1.6	<0.81	0.89
1,2-Dichloropropane		33	<0.92	<0.74
Benzene		0.48 J	<0.64	<0.51
Bromodichloromethane		<0.67	<0.66	<0.54
Bromoform		<0.41	<0.41	<0.33
Bromomethane		<0.78	<0.78	<0.62
Carbon Disulfide		<0.62	<0.62	<0.50
Carbon Tetrachloride		2.1	<0.25	0.51
Chlorobenzene		<0.92	<0.92	<0.74
Chloroethane		3.7	4.0	3.2
Chloroform		13	0.83 J	8.8
Chloromethane		1.2	1.4	3.1
cis-1,2-Dichloroethene		158	16	109
cis-1,3-Dichloropropene		<0.91	<0.91	<0.73
Dibromochloromethane		<0.85	<0.84	<0.68
Ethylbenzene		<0.87	<0.87	<0.69
Methylene Chloride		0.87	3.2	0.87
Styrene		<0.85	<0.85	<0.68
Tetrachloroethene		151	0.35	<0.22
Toluene		<0.75	0.64 J	0.83
trans-1,2-Dichloroethene		1.9	<0.79	0.99
trans-1,3-Dichloropropene		<0.91	<0.91	<0.73
Trichloroethylene		5430	14	232
Trichlorotrifluoroethane (Freon 113)		95.8	2.0	80.5
Vinyl Chloride		39.6	43.7	31.2
Xylene-o		<0.87	<0.87	<0.69
Xylene-m,p		<0.87	<0.87	<0.69
Total VOCs⁽²⁾		6116	170	553

Notes and abbreviations on last page.

Table 3
 Vapor Sample Analytical Results for Treatment Systems,
 Second Quarter 2018,
 Northrop Grumman Systems Corporation,
 Operable Unit 2, Bethpage, New York

Constituents (Units in $\mu\text{g}/\text{m}^3$)	Location ID:	96 INFLUENT	96 EFFLUENT
	Sample ID:	T96 INFLUENT (AA)	T96 EFFLUENT (AA)
		5/15/2018	5/15/2018
Volatile Organic Compounds (VOCs)⁽¹⁾			
1,1,1-Trichloroethane		17	4.5
1,1,2,2-Tetrachloroethane		<0.69	<0.69
1,1,2-Trichloroethane		2.2	<0.55
1,1-Dichloroethane		37	8.9
1,1-Dichloroethene		110	46.4
1,2-Dichloroethane		2.3	0.61 J
1,2-Dichloropropane		83.2	1.8
Benzene		1.3	2.3
Bromodichloromethane		<0.67	<0.67
Bromoform		<0.41	<0.41
Bromomethane		<0.78	<0.78
Carbon Disulfide		<0.62	<0.62
Carbon Tetrachloride		3.4	0.47
Chlorobenzene		1.2	<0.92
Chloroethane		2.9	3.2
Chloroform		12	3.3
Chloromethane		1.1	4.7
cis-1,2-Dichloroethene		161	52.7
cis-1,3-Dichloropropene		<0.91	<0.91
Dibromochloromethane		<0.85	<0.85
Ethylbenzene		0.56 J	<0.87
Methylene Chloride		11	0.69
Styrene		<0.85	<0.85
Tetrachloroethene		712	1.8
Toluene		0.68 J	117
trans-1,2-Dichloroethene		1.7	0.63 J
trans-1,3-Dichloropropene		<0.91	<0.91
Trichloroethylene		17400	1590
Trichlorotrifluoroethane (Freon 113)		101	41
Vinyl Chloride		31.7	34.8
Xylene-o		<0.87	<0.87
Xylene-m,p		1.6	<0.87
Total VOCs⁽²⁾		18695	1915

Notes and abbreviations on last page.

Table 3
 Vapor Sample Analytical Results for Treatment Systems,
 Second Quarter 2018,
 Northrop Grumman Systems Corporation,
 Operable Unit 2, Bethpage, New York

Location ID:	102 INFLUENT	102 EFFLUENT
Sample ID:	T102 INFLUENT (AA)	T102 EFFLUENT (AA)
Constituents (Units in $\mu\text{g}/\text{m}^3$)	5/10/2018	5/10/2018
Volatile Organic Compounds (VOCs)⁽¹⁾		
1,1,1-Trichloroethane	17	<0.44
1,1,2,2-Tetrachloroethane	<0.55	<0.55
1,1,2-Trichloroethane	1.4	<0.44
1,1-Dichloroethane	57.9	0.65
1,1-Dichloroethene	115	2.9
1,2-Dichloroethane	3.8	<0.65
1,2-Dichloropropane	5.5	<0.74
Benzene	0.77	<0.51
Bromodichloromethane	<0.54	<0.54
Bromoform	<0.33	<0.33
Bromomethane	<0.62	<0.62
Carbon Disulfide	<0.50	<0.50
Carbon Tetrachloride	4.2	<0.20
Chlorobenzene	<0.74	<0.74
Chloroethane	<0.42	<0.42
Chloroform	15	<0.78
Chloromethane	0.99	0.97
cis-1,2-Dichloroethene	236	2.8
cis-1,3-Dichloropropene	<0.73	<0.73
Dibromochloromethane	<0.68	<0.68
Ethylbenzene	<0.69	<0.69
Methylene Chloride	0.63	1.4
Styrene	<0.68	<0.68
Tetrachloroethene	205	0.28
Toluene	0.53 J	<0.60
trans-1,2-Dichloroethene	4.0	<0.63
trans-1,3-Dichloropropene	<0.73	<0.73
Trichloroethylene	1710	1.6
Trichlorotrifluoroethane (Freon 113)	95.0	<0.61
Vinyl Chloride	<0.082	<0.082
Xylene-o	0.35 J	<0.69
Xylene-m,p	0.87	<0.69
Total VOCs⁽²⁾	2474	11

Notes and abbreviations on last page.

Table 3
Vapor Sample Analytical Results for Treatment Systems,
Second Quarter 2018,
Northrop Grumman Systems Corporation,
Operable Unit 2, Bethpage, New York

Notes and Abbreviations:

- (1) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (2) Total VOCs represents the sum of individual concentrations of compounds detected rounded to the nearest whole
- Not Analyzed
- 3.4** bold value indicates a detection
- J Compound detected below its reporting limit; value is estimated.
- $\mu\text{g}/\text{m}^3$ micrograms per cubic meter
- ELAP Environmental Laboratory Approval Program
- NYSDOH New York State Department of Health
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compound

Table 4A
 Summary of AERMOD Air Quality Impact Analysis
 Tower 96 Treatment System, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent	CAS#	T96 Effluent (ug/m ³)	Emission Rate ⁽¹⁾			Scaled Impact - Hourly ⁽²⁾	Scaled Impact - Annual ⁽²⁾	SGC (3) (ug/m ³)	AGC(3) (ug/m ³)	%SGC	% AGC
		5/15/2018	lb/yr	lb/hr	g/s	(ug/m ³)	(ug/m ³)				
1,1,1 - Trichloroethane	00071-55-6	4.5	0.71	8.12E-05	1.02E-05	1.52E-03	4.45E-05	9,000	5,000	0.00%	0.00%
1,1 - Dichloroethane	00075-34-3	8.9	1.41	1.61E-04	2.02E-05	3.00E-03	8.80E-05	--	6.30E-01	--	0.01%
1,2 - Dichloroethane	00107-06-2	0.6	0.10	1.10E-05	1.39E-06	2.05E-04	6.03E-06	--	3.8E-02		
1,1 - Dichloroethene	00075-35-4	46.4	7.34	8.38E-04	1.06E-04	1.56E-02	4.59E-04	--	200	--	0.00%
Tetrachloroethene	00127-18-4	1.8	0.28	3.25E-05	4.09E-06	6.06E-04	1.78E-05	300	4	0.00%	0.00%
Trichloroethene ⁽⁴⁾	00079-01-6	1590	251.46	2.87E-02	3.62E-03	5.35E-01	1.57E-02	20	2.00E-01	2.68%	7.86%
Vinyl Chloride ⁽⁴⁾	00075-01-4	34.8	5.50	6.28E-04	7.92E-05	1.17E-02	3.44E-04	180,000	1.10E-01	0.00%	0.31%
cis 1,2-Dichloroethene	00156-59-2	52.7	8.33	9.51E-04	1.20E-04	1.77E-02	5.21E-04	--	63	--	0.00%
trans 1,2-Dichloroethene	00156-60-5	0.6	0.10	1.14E-05	1.43E-06	2.12E-04	6.23E-06	--	63	--	0.00%
Benzene ⁽⁴⁾	00071-43-2	2.3	0.36	4.15E-05	5.23E-06	7.75E-04	2.27E-05	1,300	1.30E-01	--	--
Toluene	00108-88-3	117	18.50	2.11E-03	2.66E-04	3.94E-02	1.16E-03	37,000	5,000	0.00%	0.00%
1,2-Dichloropropane	00078-87-5	1.8	0.28	3.25E-05	4.09E-06	6.06E-04	1.78E-05	--	4		
Carbon Tetrachloride	00056-23-5	0.5	0.07	8.49E-06	1.07E-06	1.58E-04	4.65E-06	1900	0.17		0.00%
Chloroethane	00075-00-3	3.2	0.51	5.78E-05	7.28E-06	1.08E-03	3.16E-05	--	10,000	--	0.00%
Chloroform	00067-66-3	3.3	0.52	5.96E-05	7.51E-06	1.11E-03	3.26E-05	150	14.7	0.00%	0.00%
Chloromethane	00074-87-3	4.7	0.74	8.49E-05	1.07E-05	1.58E-03	4.65E-05	22,000	90	0.00%	0.00%
Dichloromethane	00075-09-2	0.7	0.11	1.25E-05	1.57E-06	2.32E-04	6.82E-06	14,000	60	0.00%	0.00%
Trichlorotrifluoroethane (Freon 113)	00076-13-1	41.0	6.48	7.40E-04	9.33E-05	1.38E-02	4.05E-04	960,000	180,000	0.00%	0.00%

Notes and Abbreviations on next page

Notes and Abbreviations:

(1) Emission rate calculated based on effluent concentration and a stack air flow rate of 4,787 cfm. The stack air flow rate (in acfm) is taken from the actual stack air flow rate on 5/15/2018.

Effluent temperature used in the model was 92 °F from direct read in-line gauge.

$$\text{Trichloroethene (lb/hr)} = (10 \text{ ug/m}^3) \times (4,787 \text{ ft}^3/\text{min}) \times (1 \text{ m}^3/35 \text{ ft}^3) \times (60 \text{ min/hr}) \times (0.000001 \text{ g/1 ug}) \times (0.0022 \text{ lb/g})$$

$$\text{lb/yr} = \text{lb/hr} \times 8,760 \text{ hrs/yr}$$

$$\text{g/s} = \text{lb/hr} \times 1 \text{ hr/3,600 sec} \times 453.59 \text{ g/1 lb}$$

(2) Ambient impact based on AERMOD modeling using normalized rate of 1 g/s is scaled to the actual emission rate of the pollutant. Modeling was performed using the representative meteorological data from the nearest station (Farmingdale, NY) for the years 2011 through 2015, and a stack which is 55 feet high and 20 inches in diameter. The maximum impact from all the years was used for the calculations.

$$\text{Scaled hourly impact (ug/m}^3) = \text{AERMOD predicted hourly ambient impact at 1 g/s } ([\text{ug/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$$

$$\text{Scaled annual impact (ug/m}^3) = \text{AERMOD predicted annual ambient impact at 1 g/s } ([\text{ug/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$$

AERMOD Normalized Ambient Impact at 1 g/s	
Hourly ([ug/m ³]/[g/s])	Annual ([ug/m ³]/[g/s])
148.05	4.35

(3) Short-term and annual guideline concentrations for air toxic pollutants specified in the NYSDEC DAR-1 AGC/SGC tables revised August 10, 2016.

(4) Vinyl Chloride and Benzene potential emission rates are less than 0.1 lb/hr and therefore below the trigger emissions for degree of air cleaning requirement (6 CRR-NY 212-2.3). TCE potential emissions are above the trigger limit and require a 12 month rolling average of annual emission to be maintained (see Table 5A) to demonstrate compliance with the 6 CRR-NY 212-2.2 500 lb/year requirement.

AGC	Annual Guideline Concentration	10	bold value indicates a detection
CAS #	Chemical Abstracts Service Registry Number	acfm	actual cubic feet per minute
CRR-NY	New York Codes, Rules and Regulations	g/s	grams per second
DAR-1	Division of Air Resources-1	µg/m ³	micrograms per cubic meter
–	None Specified	lb/yr	pounds per year
NYSDEC	New York State Department of Environmental Conservation	lb/hr	pounds per hour
SGC	Short-term Guideline Concentration	J	Value is estimated

Table 4B
 Summary of AERMOD Air Quality Impact Analysis
 Tower 102 Treatment System, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent	CAS#	T 102 Effluent	Emission Rate ⁽¹⁾			Scaled Impact -	Scaled Impact -	SGC ⁽³⁾	AGC ⁽³⁾	%SGC	% AGC
		(ug/m ³)	lb/yr	lb/hr	g/s	Hourly ⁽²⁾	Annual ⁽²⁾				
1,1 - Dichloroethane	00075-34-3	0.7	0.18	2.03E-05	2.55E-06	8.90E-04	5.83E-06	--	6.30E-01	--	0.00%
1,1 - Dichloroethane	00075-35-4	2.9	0.79	9.04E-05	1.14E-05	3.97E-03	2.60E-05	--	200	--	0.00%
Tetrachloroethene	00127-18-4	0.28	0.08	8.73E-06	1.10E-06	3.84E-04	2.51E-06	300	4	0.00%	0.00%
Trichloroethene ⁽⁴⁾	00079-01-6	1.60	0.44	4.99E-05	6.28E-06	2.19E-03	1.44E-05	20	2.00E-01	0.01%	0.01%
cis 1,2-Dichloroethene	00156-59-2	2.8	0.76	8.73E-05	1.10E-05	3.84E-03	2.51E-05	--	63	--	0.00%
Chloromethane	00074-87-3	0.97	0.26	3.02E-05	3.81E-06	1.33E-03	8.70E-06	22,000	90	0.00%	0.00%
Dichloromethane	00075-09-2	1.4	0.38	4.36E-05	5.50E-06	1.92E-03	1.26E-05	14,000	60	0.00%	0.00%

Notes and Abbreviations:

(1) Emission rate calculated based on effluent concentration and a stack air flow rate of 8,264 cfm. The stack air flow rate (in acfm) is taken from the actual stack air flow rate on 5/10/2018. Effluent temperature used in the model was 80°F from direct read in-line gauge.

$$\text{Trichloroethene (lb/hr)} = (1.6 \text{ ug/m}^3) \times (8,264 \text{ ft}^3/\text{min}) \times (1 \text{ m}^3/35 \text{ ft}^3) \times (60 \text{ min/hr}) \times (0.000001 \text{ g/1 ug}) \times (0.0022 \text{ lb/g})$$

$$\text{lb/yr} = \text{lb/hr} \times 8,760 \text{ hrs/yr}$$

$$\text{g/s} = \text{lb/hr} \times 1 \text{ hr/3,600 sec} \times 453.59 \text{ g/1 lb}$$

(2) Ambient impact based on AERMOD modeling using normalized rate of 1 g/s is scaled to the actual emission rate of the pollutant. Modeling was performed using the representative meteorological data from the nearest station (Farmingdale, NY) for the years 2011 through 2015, and a stack which is 69.52 feet high and 24 inches in diameter. The maximum impact from all the years was used for the calculations.

$$\text{Scaled hourly impact (ug/m}^3) = \text{AERMOD predicted hourly ambient impact at 1 g/s } ([\text{ug/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$$

$$\text{Scaled annual impact (ug/m}^3) = \text{AERMOD predicted annual ambient impact at 1 g/s } ([\text{ug/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$$

AERMOD Normalized Ambient Impact at 1 g/s	
Hourly	Annual
([ug/m ³]/[g/s])	([ug/m ³]/[g/s])
348.85	2.29

(3) Short-term and annual guideline concentrations for air toxic pollutants specified in the NYSDEC DAR-1 AGC/SGC tables revised August 10, 2016.

(4) Vinyl Chloride and Benzene potential emission rates are less than 0.1 lb/hr and therefore below the trigger emissions for degree of air cleaning requirement (6 CRR-NY 212-2.3). TCE potential emissions are above the trigger limit and require a 12 month rolling average of annual emission to be maintained (see Table 5B) to demonstrate compliance with the 6 CRR-NY 212-2.2 500 lb/year requirement.

AGC	Annual Guideline Concentration
CAS #	Chemical Abstracts Service Registry Number
CRR-NY	New York Codes, Rules and Regulations
DAR-1	Division of Air Resources-1
--	None Specified
NYSDEC	New York State Department of Environmental Conservation
SGC	Short-term Guideline Concentration

21	bold value indicates a detection
acfm	actual cubic feet per minute
g/s	grams per second
ug/m ³	micrograms per cubic meter
lb/yr	pounds per year
lb/hr	pounds per hour

Table 5A
 Summary of TCE Mass Removal, Tower 96 Treatment System,
 Second Quarter 2018, Northrop Grumman Systems Corporation,
 Operable Unit 2, Bethpage, New York^(1,2,3)

Date	TCE Concentration ($\mu\text{g}/\text{m}^3$)				TCE Mass Emission ⁽⁵⁾	Percent of Allowable TCE Emissions ⁽⁴⁾
	T96 INFLUENT	T96 MIDTRAIN	T96 SUP MIDTRAIN	T96 EFFLUENT	(lbs)	12 Month Rolling Average
5/11/2017 ⁽⁵⁾	21,600	4,800	NS	4,800	55	55.2%
6/27/2017 ^(2,6)	19,700	4,030	NS	591	13	55.1%
7/18/2017	NS	NS	NS	3,360	30	63.4%
8/18/2017 ⁽⁷⁾	NS	NS	NS	4,745	66	76.7%
9/19/2017	12,100	6,610	3,670	6,130	87	92.4%
12/13/2017	18,600	6,610	95	10	0.1	91.4%
1/31/2018	NS	3,510	2,710	17	0.4	91.3%
2/28/2018	13,000	2,860	3,930	86.5	1.0	91.4%
4/13/2018	13,000	NS	NS	232	4.4	52.9%
5/15/2018	17,400	5,430	14	1590	21.9	44.5%

Notes and Abbreviations:

- Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- A carbon change out was performed in Supplemental Bed 1 and new carbon was placed in the previously empty Supplemental Bed 2 on May 18, 2017.
- TCE Mass Emission calculated based on the exhaust air flow rate on the day of sampling and the period of time since the preceding day of sampling.

$$\text{TCE (lb)} = \text{TCE Concentration } [\mu\text{g}/\text{m}^3] \times \text{Days} \times \text{Flow Rate } [\text{ft}^3/\text{min}] \times (1 \text{ m}^3/35 \text{ ft}^3) \times (60 \text{ min/hr}) \times (24 \text{ hr/day}) \times (0.000001 \text{ g}/1 \text{ ug}) \times (0.0022 \text{ lb/g})$$
- Percent of allowable TCE emissions to date is a time-weighted annual rolling average based on the 500 lb/year emission limit specified in the CRR-NY 212-2.2 Table 2. High Toxicity Air Contaminant List, revised April 1, 2017.
- For calculation purposes, the T96 MIDTRAIN concentration was used for the T96 Effluent result for May 11, 2017 as the T96 Effluent sample results were validated and rejected based on the use of non-dedicated sample collection fittings.
- T96 Influent sample collected on 6/30/2017.
- Sampling not conducted in August, the average of July and September effluent data and actual average air flow rate for the time period were used for estimated calculations for August 18, 2017.

$\mu\text{g}/\text{m}^3$ micrograms per cubic meter
 lbs pounds
 CRR-NY Codes, Rules and Regulations of the State of New York
 ELAP Environmental Laboratory Approval Program
 NS not sampled
 NYSDOH New York State Department of Health
 SUP supplemental
 TCE trichloroethylene
 USEPA United States Environmental Protection Agency
 VOC volatile organic compound

Table 5B
Summary of TCE Mass Removal, Tower 102 Treatment System,
Second Quarter 2018,
Northrop Grumman Systems Corporation, Operable Unit 2,
Bethpage, New York^(1,2,3)

Date	TCE Concentration ($\mu\text{g}/\text{m}^3$)		TCE Mass Emission ⁽²⁾ (lbs)	lbs/day	Percentage of Allowable TCE Emissions ⁽³⁾	
	T102 INFLUENT	T102 EFFLUENT			Period	12 Month Rolling Average
2/14/2017	7,150	20	0.9	0.01	1.1%	1.7%
6/30/2017	5,480	15	1.5	0.01	0.8%	0.9%
10/17/2017	3,990	40	3.0	0.03	2.0%	1.3%
12/21/2017	2,340	5	0.2	0.00	0.3%	1.1%
2/28/2018	2,970	4	0.2	0.00	0.2%	0.9%
5/10/2018	1,710	2	0.1	0.00	0.1%	1.2%

Notes and Abbreviations:

- (1) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (2) TCE Mass Emission calculated based on the exhaust air flow rate on the day of sampling and the period of time since the preceding TCE (lb) = TCE Concentration [$\mu\text{g}/\text{m}^3$] x Days x Flow Rate [ft^3/min] x ($1 \text{ m}^3/35 \text{ ft}^3$) x (60 min/hr) x (24 hr/day) x (0.000001 g/1 ug) x (0.0022 lb/g)
- (3) Percent of allowable TCE emissions to date is a time-weighted annual rolling average based on the 500 lb/year emission limit specified in the CRR-NY 212-2.2 Table 2. High Toxicity Air Contaminant List, revised April 1, 2017.

$\mu\text{g}/\text{m}^3$ micrograms per cubic meter
 lbs pounds
 ELAP Environmental Laboratory Approval Program
 NYSDOH New York State Department of Health
 T102 Tower 102
 TCE trichloroethene
 USEPA United States Environmental Protection Agency
 VOC volatile organic compound

Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/L)	Well ID Sample ID Date	GM-13D GM-13D 6/13/2018	GM-15D GM-15D 6/6/2018	GM-15D2 GM-15D2 6/6/2018	GM-16I GM-16I 6/6/2018	GM-15SR GM-15SR 6/6/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		0.42 J	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		3.7	< 1.0	0.31 J	< 1.0	< 1.0
1,1-Dichloroethene		2.4	< 1.0	0.64 J	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0J	< 2.0J	< 2.0J	< 2.0J
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		2.7	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		27.7	< 1.0	4.3	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		13.4	0.39 J	7.1	0.94 J	0.69 J
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		50	0.4	12	0.9	0.7
1,4 Dioxane^(1, 2)		3.0	< 0.17	3.8	0.16 J	0.50

See notes on last page

Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/L)	Well ID Sample ID Date	GM-17D GM-17D 6/6/2018	GM-17I GM-17I 7/13/2018	GM-18D GM-18D 6/19/2018	GM-18I GM-18I 7/5/2018	GM-20D GM-20D 6/25/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	0.29 J
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	0.55 J	0.41 J	< 1.0	49.9
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽³⁾		0	0.6	0.4	0	50
1,4 Dioxane^(1, 2)		7.8	7.7	12	6.6	5.1

See notes on last page

Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/L)	Well ID Sample ID Date	GM-20H GM-20H 6/28/2018	GM-21D GM-21D 6/18/2018	GM-21D2 GM-21D2 6/14/2018	GM-21I GM-21I 6/27/2018	GM-21S GM-21S 6/22/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		0.49 J	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	3.2	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		0.58 J	1.1	11.6	0.84 J	0.46 J
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		1.1	1.1	15	0.8	0.5
1,4 Dioxane^(1, 2)		5.8	4.6	5.2	6.5	4.2

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Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/l)	Well ID	GM-33D2	GM-34D	GM-34D	GM-34DZ	GM-35D2
	Sample ID	GM-33D2	GM-34D	REP07021PAD1	GM-34DZ	GM-35D2
	Date	6/13/2018	7/2/2018	7/2/2018	6/7/2018	6/8/2018
Volatil Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		7.5	1.5 J	1.5 J	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	0.38 J	0.34 J	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	1.2	1.2	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	0.33 J	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	6.1	6.2	1.2	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		3.5	6.1	5.9	5.9	4.8
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		18.0	236 D	237 D	80.1	30.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		29	250	250	67	35
1,4 Dioxane^(1, 2)		14	16	19	13	8.3

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Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/L)	Well ID	GM-36D	GM-36D2	GM-37D	GM-37D2	GM-38D
	Sample ID	GM-36D	GM-36D2	GM-37D	GM-37D2	GM-38D
	Date	6/26/2018	6/26/2018	6/29/2018	6/29/2018	6/7/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	0.51 J	< 1.0	0.46 J	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	0.85 J	0.36 J	1.4	0.43 J
1,1-Dichloroethene		< 1.0	0.73 J	< 1.0	0.58 J	0.49 J
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	0.41 J
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	0.51 J	3.4
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	3.2	11.0	2.5	80.2
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		0	5.3	11	5.5	85
1,4 Dioxane^(1, 2)		1.7	4.2	0.77	0.83	4.5

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Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/L)	Well ID	GM-38D2	GM-38D2	GM-39DA	GM-39DB	GM-70D2
	Sample ID	GM-38D2	REP060718MS1	GM-39DA	GM-39DB	GM-70D2
	Date	6/7/2018	6/7/2018	6/28/2018	6/28/2018	6/27/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		0.89 J	0.86 J	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		0.33 J	0.31 J	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		2.5	2.4	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		1.6	1.6	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		0.30 J	0.32 J	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		1.8	1.8	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0	2.1
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		117	117	0.52 J	1.1	7.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		120	120	0.5	1.1	9.1
1,4 Dioxane^(1, 2)		3.9	3.9	5.2	3.9	7.9

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Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/l)	Well ID	GM-71D2	GM-73D	GM-73D2	GM-73D3	GM-74D
	Sample ID	GM-71D2	GM-73D	GM-73D2	GM-73D3	GM-74D
	Date	6/15/2018	6/5/2018	6/5/2018	6/25/2018	6/5/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		1.4	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		4.8	< 1.0	0.29 J	< 1.0	< 1.0
1,1-Dichloroethene		2.7	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		0.48 J	< 1.0	0.36 J	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		0.63 J	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	1.5	0.84 J	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		11.7	33.4	27.1	1.7	1.1
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		22	33	29	2.5	1.1
1,4 Dioxane^(1, 2)		2.2	4.9	3.3	0.94	5.3

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Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/l)	Well ID	GM-74D2	GM-74D3	GM-74I	GM-75D2	GM-78D
	Sample ID	GM-74D2	GM-74D3	GM-74I	GM-75D2	GM-78D
	Date	6/6/2018	6/22/2018	6/6/2018	6/13/2018	6/26/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		0.46 J	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		0.80 J	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		3.3	4.4	< 1.0	0.86 J	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		8.1	5.8	1.2	26.0	2.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		13	10	1.2	27	2
1,4 Dioxane^(1, 2)		3.4	1.9	5.3	6.8	11

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Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/l)	Well ID	GM-78D2	GM-79I	GM-78S	GM-79D	GM-79I
	Sample ID	GM-78D2	GM-79I	GM-78S	GM-79D	GM-79I
	Date	6/26/2018	6/21/2018	6/21/2018	6/18/2018	7/5/2018
Volatiles Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	1.1	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	0.97 J	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	0.50 J	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		1.1	4.4	0.95 J	29.8	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽¹⁾		1.1	6.5	1.0	30	0
1,4 Dioxane^(1, 2)		14	3.6	3.7	6.2	4.1

See notes on last page

Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York

Constituent (units in µg/l)	Well ID	HN-40I	HN-40S	HN-42I	HN-42S	MW-3-1
	Sample ID Date	HN-40I 6/20/2018	HN-40S 6/20/2018	HN-42I 6/19/2018	HN-42S 6/19/2018	MW-3-1 6/11/2018
Volatile Organic Compounds (VOCs)^(1, 2)						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	0.60 J
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	1.8 J
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	2.7
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	2.6
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	0.31 J	< 1.0	< 1.0	0.46 J
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	15.6
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0	19.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		0.75 J	< 1.0	< 1.0	< 1.0	139
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	36.0
Total VOCs⁽¹⁾		0.8	0.3	0	0	220
1,4 Dioxane^(1, 2)		< 0.24	< 0.24	0.52	< 0.24	17

See notes on last page

Table 6
 Concentrations of Volatile Organic Compounds
 and 1,4 Dioxane in Monitoring Wells,
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation,
 Bethpage, New York



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Constituent (units in µg/L)	Well ID	N-10624	N-10627	N-10631	N-10631
	Sample ID	N-10624	N-10627	N-10631	REP062718CK1
	Date	6/27/2018	6/27/2018	6/27/2018	6/27/2018
Volatile Organic Compounds (VOCs)^(1, 2)					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		0.32 J	0.32 J	1.2	1.1
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
Total VOCs⁽³⁾		0.3	0.3	1.2	1.1
1,4 Dioxane^(1, 2)		4.6	5.2	5.6	4.6

See notes on last page

Table 6
Concentrations of Volatile Organic Compounds
and 1,4 Dioxane in Monitoring Wells,
Second Quarter 2018, Operable Unit 2,
Northrop Grumman Systems Corporation,
Bethpage, New York

Notes and Abbreviations:

- (1) Samples were analyzed for VOCs using USEPA Method 8260C; samples were analyzed for 1,4-Dioxane using USEPA Method 8270D -SIM.
(2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
(3) Total VOCs rounded to two significant figures.
(4) HN-24I and FW-03 could not be sampled during Second Quarter 2018 due to NAVY PFAS sampling activities.

Bold	Constituent detected
J	Constituent value is estimated
D	Concentration is based on a diluted sample analysis
REP	Blind Replicate Sample
µg/L	Micrograms per liter
VOCs	Volatile Organic Compounds
<1.0	Compound not detected above its laboratory quantification limit.

Table 7

Concentrations of Metals and 1,4-Dioxane in Monitoring Wells⁽¹⁾
 Second Quarter 2018, Operable Unit 2
 Northrop Grumman Systems Corporation
 Bethpage, New York.

Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-15SR GM-15SR 6/6/2018	GM-79I GM-79I 6/21/2018	GM-78S GM-78S 6/21/2018	MW-02GF MW-02GF 6/15/2018	N-10631 N-10631 6/27/2018	N-10631 REP062718CK1 6/27/2018	PLT1 MW-04 PLT1 MW-04 7/1/2018	PLT1 MW-05 PLT1 MW-05 7/1/2018	PLT1 MW-06 PLT1 MW-06 7/1/2018
Metals ⁽²⁾										
Cadmium (Total)		--	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	--	--	--
Cadmium (Dissolved)		--	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	--	--	--
Chromium (Total)		615	< 10	< 10	241	22.1	23.0	< 10	799	126
Chromium (Dissolved)		596	< 10	< 10	229	12.2	12.9	< 10	795	121
1,4-Dioxane ^(2,3)		0.50	3.6	3.7	38	5.6	4.6	< 0.24	< 0.24	< 0.24

Notes and Abbreviations:

- (1) Monitoring Well MW-1GF could not be sampled during Second Quarter 2018 due to access issues.
 (2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
 (3) Samples were analyzed for 1,4-Dioxane using USEPA Method 8270D-SIM; samples were analyzed for Cadmium and Chromium using USEPA Method 6010C.

Bold Constituent detected
 REP Blind Replicate sample
 µg/L Micrograms per liter
 -- Not analyzed
 <3.0 Compound not detected above its laboratory quantification limit.

Table 8

Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells ⁽¹⁾
 Second Quarter 2018, Operable Unit 2,
 Northrop Grumman Systems Corporation
 Bethpage, New York

Constituents (units in ug/L)	Well ID:	BPOW 1-1	BPOW 1-2	BPOW 1-3	BPOW 1-4	BPOW 1-5	BPOW 1-6	BPOW 2-1	BPOW 2-2	BPOW 2-3	BPOW 3-1	BPOW 3-2	BPOW 3-3	BPOW 3-4	BPOW 3-4	BPOW 4-1R ⁽³⁾	BPOW 4-2R ⁽³⁾
	Sample ID: Sample Date:	BPOW 1-1 4/13/2018	BPOW 1-2 4/13/2018	BPOW 1-3 4/12/2018	BPOW 1-4 4/17/2018	BPOW 1-5 4/17/2018	BPOW 1-6 4/17/2018	BPOW 2-1 4/11/2018	BPOW 2-2 4/11/2018	BPOW 2-3 4/20/2018	BPOW 3-1 4/12/2018	BPOW 3-2 5/30/2018	BPOW 3-3 4/16/2018	BPOW 3-4 4/16/2018	REP041618AD1 4/16/2018	BPOW 4-1R 4/12/2018	BPOW 4-2R 4/19/2018
Volatile Organic Constituents ^(2,4)																	
1,1,1-Trichloroethane		0.27 J	0.32 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.48 J	0.45 J	0.14 J	< 0.50
1,1,2,2-Tetrachloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.5	3.4	18.1 J	9.0
1,1,2-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.8	1.7	< 0.50	< 0.50
1,1-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.61	0.62	< 0.50	< 0.50
1,1-Dichloroethene		< 0.50	0.29 J	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4.6	4.4	0.65	0.33 J
1,2-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Butanone (MEK)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Acetone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbon Disulfide		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	3.0	3.0	0.25 J	0.24 J
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.5	2.4	0.81	< 0.50
Chloromethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.4	2.3	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
m&p-Xylenes		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl N-Butyl Ketone (2-Hexanone)		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
o-Xylene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene (Monomer)		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.14 J
Toluene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene		1.3	1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	192 D	217 D	0.34 J	1.2
Vinyl chloride		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
TVOCs ⁽⁵⁾		1.6	1.6	0	210	240	20	11									
1,4 Dioxane ^(2,4)		< 0.200	0.431	0.516	0.136 J	0.139 J	0.114 J	0.086	0.447	3.14	1.09	3.33	5.87	6.08	6.11	2.84	0.741

Table 8

Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells ⁽¹⁾
Second Quarter 2018, Operable Unit 2,
Northrop Grumman Systems Corporation
Bethpage, New York

Notes and Abbreviations:

- (1) These outpost wells have been recently repurposed for use as plume monitoring wells per the June 2015 Groundwater Monitoring Plan Addendum (ARCADIS of New York, Inc., 2015) as conditionally approved by the NYSDEC (August 25, 2015). Therefore, TVOC trigger levels that may have been previously established are no longer shown
- (2) Samples were analyzed for VOCs using USEPA Method 524.2; samples were analyzed for 1,4-Dioxane using USEPA Method 522 -SIM
- (3) The NAVY abandoned original Wells BPOW4-1 and BPOW4-2 and installed replacement Wells BPOW4-1R and BPOW4-2R between August, 2014 and October, 2014
- (4) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016)
- (5) TVOCs are rounded to two significant figures
- Bold** Value indicates constituent detected
- REP Blind Replicate Sample
- TVOCs Total Volatile Organic Compounds
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compounds
- µg/L micrograms per liter
- <0.5 Compound not detected above its laboratory quantification limit.
- J Value is estimated concentration